

General

Title

End stage renal disease (ESRD): percentage of patient months on maintenance hemodialysis during the last HD treatment of month with a chronic catheter continuously for 90 days or longer prior to the last hemodialysis session.

Source(s)

Centers for Medicare & Medicaid Services (CMS). Measure information form: minimizing use of catheters as chronic dialysis access. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 5 p.

Centers for Medicare & Medicaid Services (CMS). Measure justification form: minimizing use of catheters as chronic dialysis access. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percentage of patient months on maintenance hemodialysis (HD) during the last HD treatment of month with a chronic catheter continuously for 90 days or longer prior to the last hemodialysis session.

Rationale

Based upon data from the Centers for Medicare and Medicaid Services (CMS) Fistula First Breakthrough Initiative (FFBI), a gradual trend towards lower catheter use has been observed among prevalent

maintenance hemodialysis patients in the United States (U.S.), declining from approximately 28% in 2006 to approximately 24% by May 2007. Furthermore, the percentage of maintenance hemodialysis patients using a catheter for greater than or equal to 90 days has declined as well over this time period from nearly 12% to 9.5% to 10%. Continued monitoring of chronic catheter use is needed to sustain this trend.

Evidence for Rationale

Centers for Medicare & Medicaid Services (CMS). Measure justification form: minimizing use of catheters as chronic dialysis access. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

Primary Health Components

End stage renal disease (ESRD); hemodialysis; chronic catheter

Denominator Description

Adult hemodialysis patients who have end-stage renal disease (ESRD) for greater than 90 days as of the first day of the reporting month (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of patient months in the denominator who were continuously using a chronic catheter as hemodialysis access for 90 days or longer prior to the last hemodialysis session during the month

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A systematic review of the clinical research literature (e.g., Cochrane Review)

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

High Priority

Numerous studies demonstrate that the long-term use of venous catheters as hemodialysis access is associated with greater morbidity and higher mortality. Whereas it has the advantage of immediate use without need for maturation time, as enumerated in the Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines (2006), the long-term use of catheters is associated with substantially higher rates of infection-related complications and increased risk for central venous thrombosis, stenosis and occlusion. Numerous studies have shown that patients receiving dialysis using catheters have been found to have greater mortality risk than patients dialyzed with fistulas, whether or not diabetes mellitus was present. Higher case-mix adjusted mortality rates have been seen for hemodialysis patients dialyzing in facilities having greater catheter use.

Evidence for Additional Information Supporting Need for the Measure

Centers for Medicare & Medicaid Services (CMS). Measure justification form: minimizing use of catheters as chronic dialysis access. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

National Kidney Foundation. KDOQI clinical practice guidelines and clinical practice recommendations for 2006 updates: vascular access. New York (NY): National Kidney Foundation; 2006.

Extent of Measure Testing

Reliability Testing

Method of Reliability Testing

The developer used January 2013 – December 2013 CROWNWeb data to calculate facility level monthly and annual performance scores. The developer assessed reliability by calculating inter-unit reliability (IUR) for each reporting month and the overall 12 months. The monthly based measure was a simple average across individuals in the facility. The National Quality Forum (NQF)-recommended approach for determining measure reliability is a one-way analysis of variance (ANOVA), in which the between and within facility variation in the measure is determined. The IUR measures the proportion of the measure variability that is attributable to the between-facility variance. The yearly based measure, however, is not a simple average and the developer instead estimates the IUR using a bootstrap approach, which uses a resampling scheme to estimate the within facility variation that cannot be directly estimated by ANOVA. The developer notes that the method for calculating the IUR was developed for measures that are approximately normally distributed across facilities. Since this measure is not normally distributed, the IUR value should be interpreted with some caution.

The developer also did a comparison of the data elements used to calculate this measure in order to assess comparability of the calculations using two Medicare data sources. The measure was calculated using Medicare claims and CROWNWeb clinical data.

Statistical Results from Reliability Testing

For reliability the developer calculated the monthly and annual IUR across the 12 reporting months. As explained above, the method for calculating the IUR was developed for measures that are approximately normally distributed across facilities. IUR=0.77813 which is high and suggests 78% of variation in the measure is attributed to between facility variation.

Interpretation

The IUR suggests this measure is reliable. However, since the distribution of performance scores is skewed, the IUR value should be interpreted with some caution.

Validity Testing

Method of Validity Testing

Validity was assessed using Poisson regression models to measure the association between facility level quintiles of performance scores and the 2013 Standardized Mortality Ratio (SMR) (NQF 0369) and 2013 Standardized Hospitalization Ratio (SHR) (NQF 1463), respectively, both NQF-endorsed measures. Facility-level performance scores were divided into quintiles and the relative risk (RR) of mortality (and hospitalization, separately) was calculated for each quintile. The fifth quintile was used as the reference group. Thus, a RR greater than 1.0 for the lower performance score quintiles would indicate a higher relative risk of mortality or hospitalization.

Statistical Results from Validity Testing

Quintiles of the performance scores were defined as follows:

Q1: 0.0% to less than 4.2%

- Q2: 4.2% to less than 7.0%
- Q3: 7.0 to less than 9.7%
- Q4: 9.7% to less than 13.6%
- Q5: 13.6% to less than 60.6%

Results from the Poisson model indicated that the percent of patient-months dialyzing with a catheter greater than or equal to 90 days was significantly associated with both SMR (p less than 0.0001) and SHR (p less than 0.0001). For 2013 SMR, relative risk of mortality was the lowest in the lowest performance measure quintile (RR=0.89; 95% confidence interval [CI]: 0.86, 0.91). For quintile 2, RR=0.92 (95% CI: 0.90, 0.94), quintile 3, RR=0.92 (95% CI: 0.90, 0.94) and was 0.94 for quintile 4 (95% CI: 0.92, 0.96).

Similarly for 2013 SHR, the relative risk of hospitalization increased as the performance measure quintile increased from quintile 1. For quintile 1, RR=0.82 (95% CI: 0.81, 0.82), quintile 2, RR=0.89 (95% CI: 0.89, 0.90), quintile 3, RR=0.92 (95% CI: 0.91, 0.92) and was 0.95 for quintile 4 (95% CI: 0.94, 0.95).

Interpretation

These results of the Poisson regression suggest the predictive relationship of lower catheter use with lower mortality and hospitalization, as measured by the respective standardized mortality and hospitalization rates, compared to facilities with higher catheter use (greater than or equal to 90 days).

Refer to the original measure documentation for additional information.

Evidence for Extent of Measure Testing

Centers for Medicare & Medicaid Services (CMS). Measure justification form: minimizing use of catheters as chronic dialysis access. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 56 p.

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory Procedure/Imaging Center

Hospital Outpatient

Managed Care Plans

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Does not apply to this measure

Target Population Age

Age greater than or equal to 18 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

The measurement period

Denominator Sampling Frame

Enrollees or beneficiaries

Denominator (Index) Event or Characteristic

Clinical Condition

Patient/Individual (Consumer) Characteristic

Therapeutic Intervention

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

Adult hemodialysis patients who have end-stage renal disease (ESRD) for greater than 90 days as of the first day of the reporting month

Note: Refer to the original measure documentation for additional denominator details and calculation algorithm/measure logic.

Exclusions

Exclusions that are implicit in the denominator definition include:

- Pediatric patients (less than 18 years old)

- Acute hemodialysis patients (hemodialysis patients who have had ESRD for less than 91 days)

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

Number of patient months in the denominator who were continuously using a chronic catheter as hemodialysis access for 90 days or longer prior to the last hemodialysis session during the month

Exclusions

Unspecified

Numerator Search Strategy

Fixed time period or point in time

Data Source

Administrative clinical data

Registry data

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a lower score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Minimizing use of catheters as chronic dialysis access.

Measure Collection Name

End Stage Renal Disease (ESRD) Quality Measures

Submitter

Centers for Medicare & Medicaid Services - Federal Government Agency [U.S.]

Developer

Funding Source(s)

Centers for Medicare & Medicaid Services (CMS)

Composition of the Group that Developed the Measure

The University of Michigan Kidney and Epidemiology Cost Center (UM-KECC), develops, maintains, and updates the End Stage Renal Disease (ESRD) Quality Measures for the Centers for Medicare and Medicaid Services (CMS), under the Quality Measure Development and Maintenance contract with CMS. In addition, UM-KECC works with CMS's Measures Management System (MMS) in the development, evaluation, and reporting of the current ESRD Quality Measures.

Financial Disclosures/Other Potential Conflicts of Interest

Unspecified

Endorser

National Quality Forum - None

NQF Number

not defined yet

Date of Endorsement

2015 Oct 1

Measure Initiative(s)

Dialysis Facility Compare (DFC)

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2015 Sep

Measure Maintenance

Annually

Date of Next Anticipated Revision

Measure Status

Please note: This measure has been updated. The National Quality Measures Clearinghouse is working to update this summary.

Measure Availability

Source available from the [Dialysis Data Web site](#) .

For more information, refer to the [Dialysis Data Web site](#) or contact Casey Parrotte at the Kidney Epidemiology and Cost Center, The University of Michigan, 1415 Washington Heights, Suite 3645 SPHI, Ann Arbor, MI 48109-2029; Phone: 734-763-6611; Fax: 734-763-4004; Email: parrotte@med.umich.edu.

NQMC Status

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This NQMC summary was updated again by ECRI Institute on July 14, 2016.

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Production

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